

## 6.0 COMPARISON OF ALTERNATIVES

As stated in section 3.0, we evaluated alternatives to the 9/9A Proposal to determine whether these alternatives would be reasonable and environmentally preferable to the proposed action. Section 3.0 describes the range of alternatives considered, as well as alternatives that were considered but eliminated from further analysis. This section describes two alternatives that we considered and compares them to the corresponding segment of the proposed project. These are shown on figure 6-1 and are the:

Original Proposed Route Alternative, and  
ConEd Offset/State Route 100 Alternative

Because detailed surveys comparable to those provided by Millennium for the proposed route are unavailable for portions of the ConEd Offset/State Route 100 Alternative along State Route 100 and in the area adjacent to the ConEd right-of-way, our analysis is based on data from USGS topographic maps, NWI maps, aerial photos (except some locations along State Route 100), and limited field inspections in those areas. Based on comparison of each alternative and the corresponding segment of the proposed route, we have provided a recommendation comparing the alternative to the corresponding segment of the proposed route.

### 6.1 MAJOR ROUTE ALTERNATIVES

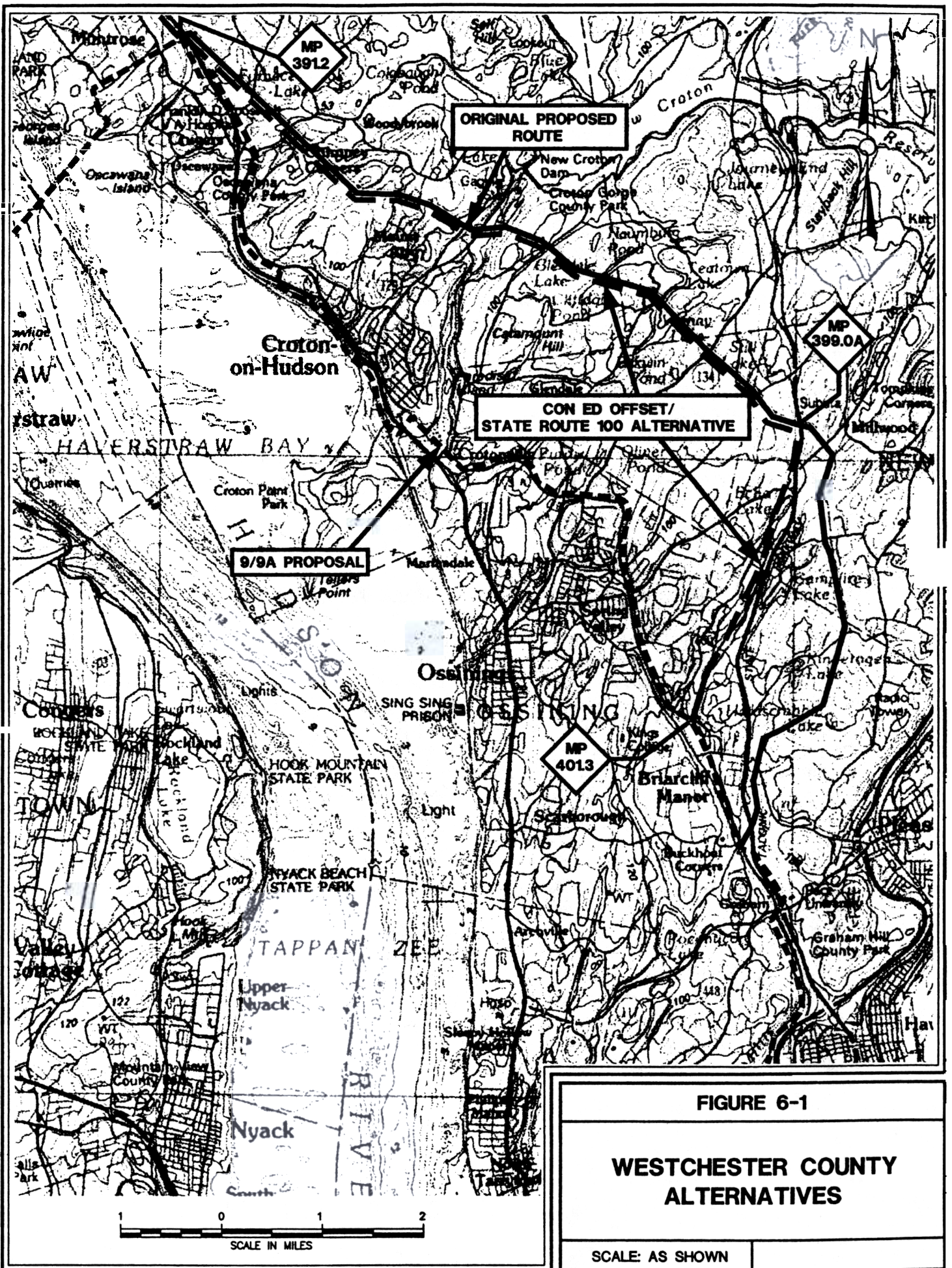
#### Background Summary of the Original Route within the ConEd Electric Right-of-way

Millennium originally proposed to install its pipeline within the ConEd powerline right-of-way for about 22.7 miles between approximate MPs 391.6A <sup>1/</sup> and 399.1A, MPs 399.4A and 405.1A, and MPs 408.7A and 417.7A in Westchester County. As proposed at that time, the pipeline would be placed 50 feet from the powerline structure centerline between MPs 391.6A and 399.1A and between powerline structures between MPs 399.4A and 417.7A. The separation between the centerlines of the two powerline structures on the existing right-of-way ranges between 80 and 175 feet. The segment between MPs 391.6A and 408.7A is within a relatively undeveloped area; the segment between MPs 408.7A and 417.7A is in a more developed commercial and residential area where deviations off the powerline right-of-way would impact adjacent development.

ConEd commented that its powerline constitutes the primary transmission facility that supplies about 40 percent of the electricity to Westchester County and New York City and that any service interruption on this portion of its electric transmission system would have catastrophic effects on New York City and the adjacent areas. ConEd cited the 1995 pipeline accident in Edison, New Jersey, and stated that a similar accident on its right-of-way would require days or weeks to repair. To minimize the risk associated with such an accident and the possibility of a system blackout, ConEd stated that it would need to permanently reduce the transfer limit on this part of its system and increase the use of in-city generating stations. This change would cost ConEd and its ratepayers tens of millions of dollars annually and would not protect against localized service outages. ConEd requested consideration of alternatives that would generally move the pipeline away from the powerline right-of-way or away from the most sensitive areas of its system.

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<sup>1/</sup> The "A" designation indicates the MP on the original proposed route



Millennium responded that it had been working with ConEd to develop proposals that would allow the pipeline to be safely constructed and operated within the powerline rights-of-way in accordance with the USDOT's safety and corrosion protection requirements. Millennium also cited the PSCNY's 1990 approval of Empire State's pipeline that was built along 115 miles of the New York Power Authority's powerline right-of-way, a major west-east component of the interconnected power system in New York. As with the Empire State pipeline, reliable mitigation systems can be designed to reflect site-specific features of ConEd's system, including number of circuits, proximity of the transmission lines to each other, resistivity of the soil, and other factors. Millennium also stated that, at a minimum, it would:

design the pipeline according to specifications developed through soils resistivity surveys, and a high voltage mitigation study that would determine the effects of fault currents and induced voltages from the powerlines and reduce them to acceptable levels;

train all personnel working in areas near powerlines about the hazards associated with powerline rights-of-way and the proper use of equipment grounding;

develop and enforce procedures regarding all aspects of construction activity near powerlines with the intent of removing all potential hazards associated with pipeline construction in powerline rights-of-way;

use non-electric detonators to eliminate the potential effect of stray electric currents and matting to prevent damage from fly rock; and

provide an electrical safety inspector for each pipeline spread working within or adjacent to powerline rights-of-way. The inspector would be responsible for electrical safety and would be knowledgeable in proper construction procedures and the dangers associated with inductive and conductive coupling, lightning, fault current, etc., on above- and below-ground structures.

In their comments on the DEIS, the PSCNY and ConEd reiterated their concern about construction within this powerline right-of-way. Both continued to protest the installation of the pipeline within the ConEd right-of-way and filed extensive comments in early 2000 against installation of the pipeline adjacent to or within the ConEd right-of-way in Westchester County. On March 6, 2000, the New York State Reliability Council (NYSRC) expressed concerns that the original route would increase the likelihood of an occurrence of an extreme contingency. The NYSRC believes that a gas explosion is an event which has a very low probability. But, if it occurred along ConEd's Westchester right-of-way, the potential consequences could be catastrophic to the electric supply for New York City. On March 21, 2000, we asked Millennium what it was doing to resolve this issue. This inquiry resulted in the identification of the 9/9A Proposal and the development of the April 18, 2000 MOU between the PSCNY and Millennium (see appendix F).

In response to our SNOI, we received 473 comment letters and a petition signed by over 5,400 residents in communities affected by the 9/9A Proposal during the comment period. These comments almost universally opposed the 9/9A Proposal particularly that segment of the route in Croton-On-Hudson, Ossining, and Briarcliff Manor (between approximate MPs 394.8 to 402.2) (see section 1.3 of Part I of this SDEIS). Many commenters requested that the pipeline remain on the ConEd right-of-way.

Therefore, we evaluated two major route alternatives for the 9/9A Proposal (see section 6.1.2). For purposes of comparison. The first alternative is the originally proposed route that would generally follow the ConEd powerline right-of-way (Original Proposed Route Alternative). The second is a composite of the

original proposed route (with a 100-foot offset) between MPs 391.2 (MP391.6A on the original route) and 399.0A and a route variation suggested by the town supervisor of New Castle, New York, along State Route 100 between MPs 399.0A and 401.3 (ConEd Offset/State Route 100 Alternative). The supervisor of the Town of New Castle, New York, in comments filed on the DEIS, originally suggested an alternative which starts to follow State Route 100 from Millwood, New York, to the intersection with State Route 117 south of Briarcliff Manor, New York, as a way to avoid construction near the Catskill Aqueduct and through the New York State Wildlife preserve at the Campfire Club of America. He suggested that an alternative along State Route 100 would be preferable since it would place the pipeline in an area that is more commercial and industrial and less residential than a route along the ConEd corridor would be. These alternatives are described in section 6.1.2 and shown on figure 6-1.

Because of the issues raised by ConEd, the PSCNY, and the NYSRC associated with use of the ConEd right-of-way, we asked the FERC electrical engineering staff to review the feasibility and electrical engineering compatibility of the Original Proposed Route Alternative and the ConEd Offset/State Route 100 Alternative (see section 6.1.1).

### **6.1.1 Analysis of the Issues Associated With Use of the ConEd Right-of-Way**

For purposes of this analysis, we grouped the issues presented by ConEd, the PSCNY, and Millennium into eleven topics as discussed below.

#### Co-location of Gas Pipeline and Electric Transmission Lines as Originally Proposed

ConEd and the PSCNY state that proposed construction within the ConEd right-of-way is not safe. The expert testimony provided by PSCNY in the form of affidavits focuses on the dire consequences of a transmission line failure that could happen during, and after the pipeline construction. Millennium claims that many of these safety concerns, such as rock blasting, trench excavating, and construction equipment maneuvering, can be mitigated by the state of the art techniques, and that a gas pipeline explosion has a very small probability of occurrence. To support its argument, Millennium identified several companies that have natural gas pipelines crossing its system (Iroquois, Algonquin Gas Transmission Company, and Tennessee Gas Pipeline Company). ConEd acknowledges that each of these three existing pipelines cross its system only once and that they do not parallel its right-of-way.

We find the arguments presented by the PSCNY concerning the potential damage to ConEd's transmission facilities during the construction phase of the Millennium pipeline's original route to be compelling, and their concerns appear to be valid. For example, the PSCNY documented its concern that because Millennium's construction plan underestimated the amount of rock in the area to be excavated, Millennium significantly understated both the amount of blasting needed to prepare the surface for the pipeline and the danger to ConEd's 345 kV transmission facilities. Millennium did not dispute the PSCNY's concern about this apparent flaw in its construction plan. Instead, Millennium only stated that safety procedures could be put in place to address the danger raised by the PSCNY. Subsequently, Millennium filed its 9/9A Proposal. This route should only require a limited amount of blasting along the ConEd right-of-way. Consequently, this problem would be reduced by avoidance if the alternative were chosen.

Conversely, we believe that ConEd and PSCNY have overstated the potential danger to ConEd's transmission facilities during the pipeline's operational phase. We do not find compelling the ConEd and PSCNY arguments concerning potential dangers regarding the operation of the pipeline as explained below.

### **2. PSCNY Comment that Lightning May Cause Gas Pipeline Explosion**

We believe lightning can strike power lines at any voltage levels and anywhere. Extra-high voltage (EHV) lines are generally better equipped to protect the lines against lightning-induced surges than most rural distribution circuits. A direct hit by lightning can snap power lines, can damage insulators, and puncture buried cables or pipelines. However, we have not seen any report of a gas pipeline explosion caused by lightning per se.<sup>2/</sup>

### 3. PSCNY Comment that Corona Could Ignite Gas Vapor

The PSCNY claims that corona produced by the high voltage lines could cause flash over and produce an electrical short-circuit. However, corona phenomena during inclement weather, or in a polluted environment, while causing more losses on the lines, are not known to strike buried cables or pipelines. Also, gas vapor ignition by corona is not likely to occur because of two factors: (a) the below-the-threshold value of corona strength (voltage gradient), and (b) the inability of the gas vapor to form around the electrical conductors for any appreciable time due to the presence of wind and its buoyancy. In any event, Millennium proposes that the pipeline be equipped/designed with safety measures to prevent gas leaks and shutdown the system in the event of a problem.

We believe that, in actual operation, a corona may cause a transient flash over or a short-circuit via a grounded object (such as a nearby tree top), but a corona by itself would not likely result in a gas vapor ignition.

### 4. PSCNY Comment that a Short-circuit Current Can Puncture the Gas Pipeline

ConEd explains that a short-circuit current can reach some 63,000 aMPs. The PSCNY claims that a short-circuit can be attracted by the metal pipe buried nearby on the right-of-way, causing a devastating gas explosion. The PSCNY also claims that an analysis has shown that a short-circuit current can puncture a buried metal pipe. However, PSCNY did not provide a copy of the engineering analysis for us to fully understand its position on the matter of the ground current phenomenon.

Our understanding is that most of the ground-current resulting from a short-circuit, travels on the ground wires (or sky wires), and only a small portion (depending on the soil resistivity) travels underground. Furthermore, if the pipeline is not located directly under the electric transmission lines, it does not "attract" ground-current. It is a well known phenomenon, in power engineering, that the ground-current follows the path of its transmission circuit and does not deviate from it. A pipeline, buried between two transmission tower rights-of-way and not directly under the lines, is not likely to receive any ground-current. Moreover, we have reviewed a recent USDOT report<sup>3/</sup> on existing pipelines sited near transmission lines that were observed to have been punctured following a lightning strike. We believe that a lightning strike had definitely broken an electric wire and caused an electrical short-circuit. Until we have a proof to the contrary, we believe that it was the lightning or a direct contact with a fallen live wire (but not a ground-current) that had punctured the pipe. While a broken electric wire in the distribution system (low voltage) may remain live for a time before the re-closure mechanism is locked out, an EHV line, when faulted or open, will be tripped out in just a fraction of a second.

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<sup>2/</sup> Attachment C to USDOT's Report on "Accident/Incident Records Related to Lightning Strikes, Fault Currents, Stray Currents, Induced AC (1984 - 1999)."

<sup>3/</sup> Attachment C to USDOT's Report on "Accident/Incident Records Related to Lightning Strikes, Fault Currents, Stray Currents, Induced AC (1984 - 1999)."

## 5. Feasibility of Constructing the Pipeline between the Electric Lines

If construction activities and physical safety measures can be resolved, the originally proposed pipeline construction between electric towers along the ConEd right-of-way is feasible. In its November 7, 2000 data response, ConEd states that for construction of its pipeline replacement project where it plans to install a pipeline adjacent to its electric transmission towers, it has safety procedures it will use to protect the electric lines from damage. It states that any blasting required in connection with the project will be done in accordance with procedures such as those identified in its Blasting Requirements. We note that Title 29 CFR Section 1926.550 requires 20 feet of minimum clearance between 345 kV electric lines and any part of a crane or "load". In addition, when equipment is in transit with no load or the boom is lowered, the equipment's minimum clearance must be 10 feet from 345 kV lines. These regulations also require a person to be designated to observe the clearance of equipment for all operations where it is difficult for the operator of the equipment to maintain the desired clearances. Compliance with the requirements of Section 1926.550 would be used to safely conduct construction activities near all powerlines along the project. Any pipeline alignment that minimizes the length of pipe that is installed immediately beneath electric lines would avoid or reduce risk during construction (e.g., the ConEd Offset/State Route 100 Alternative versus the Original Proposed Route Alternative).

We believe the dangers that ConEd and the PSCNY staff claim will be caused by electric phenomena, such as short-circuit and corona flash over, are not likely to occur in the post-construction period. Furthermore, we believe that when a pipeline is located between the rights-of-way of electric transmission towers, this pipeline would be much better protected from lightning strikes because the transmission towers and conductors would then act as a good shield for any installation along the right-of-way.

Electromagnetic induction of EHV lines on surrounding structures has been well studied and can be resolved through proper shielding and grounding. Pipe corrosion can be prevented by the use of cathodic protection. Construction activities can be carried out at a prescribed safe distance from the transmission towers and lines. Scheduling construction during an appropriate low-load period would also help eliminate or reduce the risk of a widespread disruption of service should an electrical outage occur. Typically, such low-load periods are in the spring and fall seasons, weekends and holidays, and week nights between the hours of 11:00 pm and 7:00 am.

## 6. Concerns about the Pipeline Crossings or Paralleling of the ConEd Right-of-Way

ConEd's concerns with regard to Millennium's original route focus on the potential physical damage to its EHV structure and heavy power-carrying lines during the construction phase, and the danger of gas explosion during the pipeline's operational phase. The PSCNY, which prefers to have the pipelines located as far away as 1,500 feet from the ConEd right-of-way, states that it has no objection to Millennium's 9/9A Proposal, although it recognizes that this route alleviates but does not eliminate ConEd's concerns. However, the 9/9A Proposal alignment would cross the ConEd right-of-way at five locations (MPs 402.7, 405.5, 406.9, 409.7, and 416.6) and would be parallel to, and in some places less than 100 feet from, its right-of-way between MPs 402.7 and 405.4 for about 2.7 miles.

We believe that the risk of physical damage to ConEd's lines and transmission towers during the construction phase would not be eliminated with either the Original Proposed Route Alternative, ConEd Offset/State Route 100 Alternative, or the 9/9A Proposal. However, we believe that the risk of gas pipeline explosion, or other electrical mishaps, after the pipeline has been buried and is operated in accordance with all applicable safety measures, will be much reduced and, perhaps eliminated altogether. However, the 9/9A

Proposal alignment significantly reduces the amount of pipeline constructed along the ConEd right-of-way, a 20 mile reduction (2.7 miles versus 22.7 miles along the Original Proposed Route Alternative).

We believe that carefully designed construction procedures are needed for the 2.7-mile-long stretch of the 9/9A Proposal where it would parallel the electric right-of-way (MPs 402.7 to 405.4). The PSCNY has included such construction procedures for this section of the 9/9A Proposal in the MOU it developed with Millennium. Further, we believe that similar careful procedures could be used for construction between MPs 391.2 (MP391.6A )and 399.0A of the ConEd Offset/State Route 100 Alternative.

ConEd Offset/State Route 100 Alternative (e.g., installation of the pipeline about 100 feet from the transmission line towers)

ConEd believes that placing Millennium's pipeline at a distance of 100 feet from the center of the outer transmission tower would not abate its proximity concerns as far as rock blasting during construction or eliminate the potential for the gas pipeline to explode during the operational phase. We believe that the ConEd Offset/State Route 100 Alternative has merit in that construction activities (such as maneuvering construction cranes or blasting rock) would be easier to carry out along the ConEd Offset/State Route 100 Alternative than the originally proposed route. For example, locating a pipeline adjacent to rather than beneath or between EHV lines has obvious benefits because it reduces clearance concerns during the construction and operational phases of the pipeline project. Careful use of blasting charges and use of blast mats can effectively control fly rock. Use of the rocsaw trencher in lieu of blasting may be feasible to avoid blasting in some areas.

Due to the nature of the alternating current (AC) and depending on the geometry of the power-line phases configuration, electromagnetic strength measured at the ground level between the rights-of-way of power transmission towers can be less than the one measured at the immediate outer vicinity of the right-of-way. However, the magnitude of the electric and the magnetic fields inside the right-of-way or along the corridor immediately adjacent to the right-of-way, does not present an extraordinary risk to a normally well protected pipeline. Therefore, as far as electromagnetic compatibility and short-circuit current flow are concerned, the Original Proposed Route Alternative, 9/9A Proposal, and ConEd Offset/State Route 100 Alternative present little advantage of one over the other.

Clearly, the ConEd Offset/State Route 100 Alternative presents less exposure to causing the physical risks during the construction phase, when compared to the original route (Original Proposed Route Alternative). These risks nonetheless can be real. Millennium should meet ConEd's electric and physical safety standards during the construction, and after the pipeline has been placed in the ground. In particular, the use of matting to prevent damage from fly-rock and state-of-the-art rock-blasting techniques may be more effective since the ConEd Offset/State Route 100 Alternative would be on one side of the right-of-way and 100 feet from the tower centerline. Furthermore, precautionary measures and safety features described in the MOU between the PSCNY and Millennium would further enhance the operational safety of the proposed pipeline.

## 8 ConEd's Westchester County Right-of-Way Power Flow

ConEd claims that the six 345 kV circuits located on its right-of-way in Westchester County carry about 40 percent of the power required by the New York City load. Our review of ConEd's 1999 Summer Peak load-flow case (submitted to FERC Staff in conjunction with Docket No. EL99-58-000), we find ConEd's claim to be reasonable. The load flow case shows a MW flow equivalent to 42 percent of the New

York City load flowing north to south over the 345 kV circuits in Westchester County right-of-way. We also reviewed testimony filed by Charles P. Rusowicz of ConEd in Docket No. OA96-138-000 and it shows a slightly higher percentage (about 45 percent).

During the course of a hearing in Docket No. EL99-58-000 (Village of Freeport v. ConEd), the ConEd witness stated that in view of the sensitivity of the Westchester County right-of-way to the reliability of power supply to a city of nearly 8 million people, New York City has required that ConEd install generating capacity equivalent to 80 percent of its load south of the Westchester County right-of-way. By doing so, New York City hopes to reduce the impact of loss of the Westchester County right-of-way 345 kV lines to a manageable proportion should a complete outage of the Westchester County right-of-way occur. For example, when the New York City load is 10,000 megawatts (MW), ConEd needs 4,000 MW from the north via the Westchester County right-of-way powerlines, about 1,000 MW from the west via ties in northern New Jersey to the Pennsylvania-New Jersey-Maryland Independent System Operation (ISO), and the remaining 5,000 MW from in-city generation. For instance, if in-city generation is limited to 5,000 MW and import capability from the west is increased to 2,000 MW, a complete loss of the Westchester County right-of-way powerlines would still leave New York City short 3,000 MW. If in-city generating capability is increased to 8,000 MW (80 percent of the city load), the impact of a complete loss of the Westchester County right-of-way powerlines could be manageable.

The problem facing ConEd in these areas is that in-city generators cannot be run for a long period of time, because they are too expensive compared to power and energy available from sources to the north. And, the flow on the Westchester County right-of-way powerlines must be monitored and maintained below a predetermined value for system reliability purposes. Thus, an efficient operation of this energy system requires an economic and reliability based mix of in-city generation and power brought in over the Westchester County right-of-way.

9. Cost of Constructing the Original Proposed Route Using "Storm Watch" (or some other mitigation plan) for an Estimated Period of 6 Months

The New York ISO Services Tariff, on page 38 (Section 2.173), defines the "Storm Watch" as "Actual or anticipated severe weather conditions under which region-specific portions of New York State Transmission System are operated in a more conservative manner by reducing transmission transfer limits." "Storm Watch" is a special reliability procedure for downstate New York. Under "Storm Watch", transfer capacity from upstate to downstate New York is reduced when there is a threat of a thunderstorm in the area. As a result, the higher cost generation facilities in downstate New York may have to be substituted for lower cost imports from the north. The procedure was established after the New York City blackout in July of 1977, and is the subject of a PSCNY Order.

When "Storm Watch" is invoked by the ISO, it may result in redispatch costs that affect Location Based Marginal Prices (LBMPs) in the realtime market (this is as opposed to the day-ahead market). To the extent that redispatch costs result in a revenue shortfall in the realtime market, because the additional payments to local generators (in the south) turn out to be greater than the additional LBMP revenues and the dispatch savings from distant generators, the shortfall is funded through the Scheduling, Control and Dispatch ancillary service (Rate Schedule 1 in the ISO Tariff). Since the tariff does not permit this service to be self-provided, all customers in the New York ISO (not just ConEd) share in these costs. Thus, it is the ISO that calls "Storm Watch," and when called, "Storm Watch's" cost impacts are absorbed all over the state, not by ConEd alone.

Since we do not have detailed data on the New York generators, nor the appropriate models to first dispatch and then redispatch the system, we cannot calculate the potential cost impact of instituting "Storm Watch" for six months when the Millennium pipeline could be constructed. In the absence of such data and tools, we can provide only an heuristic estimate as explained below.

The price differential between the upstate LBMPs and the downstate LBMPs vary anywhere between \$5 and \$40 per megawatt-hour (MWh) depending on the hour of day, the day of the week, and the season. Assuming that redispatch of the NYISO system (due to "Storm Watch") results in a price differential variation between \$10 and \$50 per MWh and that 500 MW of downstate generation needs to be dispatched for 6 months (which would not be dispatched had no "Storm Watch" been in place), the variable cost impact of "Storm Watch" on the realtime market could be anywhere between \$20 and \$100 million. We note that the above economic/cost information lies beyond the scope of an environmental analysis and do not believe it is necessary to conduct any further refinement of this information in our EIS.

#### 10. Timing of Construction on the ConEd Right-of-Way

A seasonal load shape, coupled with hourly flow data for the Westchester County right-of-way powerlines, could conceivably point to a suitable period during which construction could be undertaken. In the absence of flow data, ConEd's load shape may be used as a proxy, with an understanding that electric power flows on the Westchester County right-of-way may not be directly proportional to ConEd's demand variations. Generally, ConEd's demand is very high during summer and winter months, and therefore, those months may not be suitable for construction of the pipeline based solely on power supply needs.

#### ConEd's Gas Pipelines along its Electric Transmission Corridor

ConEd has indicated that the gas mains it operates near the Westchester transmission powerlines are small-diameter, low-pressure pipelines. ConEd operates two 12-inch-diameter pipelines at MAOPs of 245 psig, and the rest of its system mains have MAOPs of 99 psig or less. ConEd reports that its gas system generally crosses and does not parallel its electric transmission lines. ConEd is in the process of replacing portions of a 70-year-old, 8-inch-diameter metal pipeline with a 12-inch-diameter high-density polyethylene pipeline. The replacement pipeline will be parallel to a portion of ConEd's electric transmission corridor between MPs 403.4 and 404.2 which is immediately south of State Route 117. Construction of this replacement pipeline is planned to occur in 2001 and the pipeline would have an MAOP of 99 psig. Millennium and ConEd's pipelines would be in the same corridor in this area..

ConEd's Westchester electric transmission right-of-way contains three sets of towers. The first set of towers was built in 1932 and held two 138 kV circuits. This system was replaced with two 345 kV circuits in 1972. The second and third sets of towers were built in 1956 and 1961, and have been periodically upgraded since then. All three sets of (345 kV) towers are located on adjacent rights-of-way south of Millwood for less than 2 miles.

ConEd states that the new pipeline will be constructed on a bike path adjacent to the electric transmission right-of-way rather than on it. This means that both the ConEd replacement pipeline and the proposed Millennium pipeline would be in the same corridor, if not the same location between approximate MPs 403.4 and 404.2. ConEd also indicates that transmission line sag and clearance during the construction period will not be a factor, and that blasting required in connection with the project will be done in accordance with procedures such as those set forth in attachment 1 to its November 7, 2000 response to

question 3(b). Since the new pipeline will be made of polyethylene, ConEd has indicated that an electromagnetic compatibility study of induced voltages and currents has not been done.

#### Evaluation of the Alternative Routes

We have examined three alternatives in this region from an "electric" compatibility and construction standpoint: (1) the Original Proposed Route Alternative, (2) the 9/9A Proposal, and (3) the ConEd Offset/State Route 100 Alternative. ConEd and the PSCNY staff are opposed to the Original Proposed Route Alternative. Their arguments are based on qualitative assessments of electrical incidents that may occur during the construction of the pipeline, and those that may occur during the operational phase after the pipeline construction has been completed. As we stated earlier, we find the arguments related to the construction phase of the Original Proposed Route Alternative compelling. We find the operational fears to be unfounded. Also, we do not believe, from an electrical engineering standpoint, that the ConEd Offset/State Route 100 Alternative should be rejected for the reasons previously stated.

With respect to the 9/9A Proposal, on July 27, 2000, the PSCNY indicated that the amended route reflects its negotiations with Millennium and, while not ideal, it is acceptable. ConEd is opposed to it. However, the use of the 9/9A Proposal would avoid most of ConEd's high voltage electric transmission system and this would reduce the risk to ConEd's high voltage facilities and service over them during construction and operation of Millennium's transmission system. Again, we are of the view that ConEd's and the PSCNY's fears of operating this system, after the pipeline has been laid in the ground, are unfounded.

ConEd is also opposed to the ConEd Offset/State Route 100 Alternative. We do not yet know how the NYPSC staff views the alternative. We believe that this alternative would mitigate some concerns of the construction phase. Also, as far as electromagnetic compatibility and short-circuit current flow are concerned, we believe that the Original Proposed Route Alternative, the 9/9A Proposal, and the ConEd Offset/State Route 100 Alternative have very little advantage of one over the other.

#### **6.1.2 Summary of Comparison of Alternatives**

We evaluated using a 100 foot offset along the entire originally proposed route between MPs 391.2 (MP391.6A) and 416.6 (417.7A on the original route) except between MPs 404.1 and 406.8 (2.7 miles) where the 9/9A Proposal would follow the same route along the Briarcliff-Peekskill Trailway. We evaluated the area that would be affected by a 100 foot offset from the ConEd Westchester electric right-of-way by using topographic maps, recent aerial photos, and helicopter and ground reconnaissance.

Between MPs 391.2 (391.6A) and 399.0A (the intersection of the ConEd corridor and the Taconic Parkway near Millwood, New York) we observed that there were no structures within the area that would be directly affected by construction of the offset route and only one that appeared to be within about 50 feet of the construction right-of-way (a residence near MP 392.5A). We determined that this segment should be investigated further.

However, in this alternative, we decided not to evaluate the following portions of the ConEd corridor for the reasons stated below and because, in developing our alternatives, we are attempting to minimize the use of the ConEd corridor. We believe that use of an "offset" construction workspace significantly reduces the risk of damage to the electric utility during construction since it would place trench excavation near only one set of towers rather than two. But, we would like to minimize pipeline construction proximate to the electric transmission towers because a risk would still exist for damage during construction.

Analysis of an alternative route for a 100-foot offset along the original route between MPs 399.0A and 403.9A (between the ConEd Westchester right-of-way crossings of the Taconic Parkway and State Route 117, respectively) was not considered further because of concerns expressed by the NYCDEP about the proximity of the Catskill Aqueduct (between MPs 399.7A and 401.6A) to any pipeline construction along the ConEd corridor.

2. Also, analysis of an alternative route for a 100-foot offset from the electric towers along the segment between MPs 406.9A and 415.3A (between the ConEd Westchester right-of-way crossings of Old Saw Mill River Road in Mount Pleasant, New York, and Jackson Avenue in Greenburgh, New York, respectively) was excluded because it would be more difficult to construct because of the very steep terrain and the encroachment of development on the electric corridor.

### Original Proposed Route Alternative

The Original Proposed Route Alternative would deviate east from MP 391.2 (MP391.6A) on the 9/9A Proposal for about 2,000 feet to the ConEd powerline right-of-way. Except for one deviation near Millwood to avoid the ConEd substation, the Original Proposed Route Alternative would be placed within the ConEd right-of-way for about 13.5 miles to MP 404.1 on the 9/9A Proposal. At that point, it would follow the same route as the 9/9A Proposal (on the Briarcliff-Peekskill Trailway bicycle path) to MP 406.8 on the 9/9A Proposal and then continue on the bicycle path for another 0.5 mile to the intersection with the ConEd right-of-way. The alternative would then be placed within the ConEd right-of-way for about 9.2 miles to MP 416.6 (MP 417.7A) on the 9/9A Proposal. The Original Proposed Route Alternative would place the pipeline within 40 to 50 feet from the center line of the ConEd 345 kV electric transmission towers for a total distance of 22.7 miles within the ConEd Westchester right-of-way. Millennium had proposed to use much of the existing ConEd Westchester right-of-way for the construction workspace for the Original Proposed Route Alternative. This means that construction activities would occur directly under the electric transmission lines.

We do not believe the use of the ConEd powerline as described for the Original Proposed Route Alternative is reasonable. FERC staff evaluated the comments and information filed by various parties on the technical problems associated with construction and operation of the project within the ConEd Westchester County right-of-way. That analysis concurs with those opinions in that construction of the pipeline between the transmission towers on this extremely sensitive corridor would pose an undue risk to the reliability of electric supplies to New York City and parts of Westchester County.

Since the terrain along the ConEd Westchester right-of-way between MPs 391.2 (MP391.6A) and 416.6 (MP 417.7A) is often very rugged with hard, crystalline or microcrystalline bedrock at the surface, it is anticipated that most of the trenching for pipeline installation would have to be accomplished by blasting open a trench. Blasting would also probably be required to create level workspace along the construction right-of-way. This blasting activity would be between the towers and possibly under the transmission wires. The concern is that there may be damage to the transmission wires and towers caused by blasting, particularly by flying rock, even if precautions such as using mats and limiting the sizes of charges are used. This concern is heightened since much of the construction was originally proposed to be between the towers where there might be damage to two (or more) sets of towers and wires. In some locations the towers are only separated by 80 feet as measured from tower center lines. Since we concur that the reliability of the existing electric supply that is provided by the ConEd Westchester right-of-way is important to maintain, we do not recommend use of the Original Proposed Route Alternative. However, analysis of operation of

the pipeline along this corridor shows that it would not pose a significant risk to electric reliability (see section 6.1.1).

However, we will briefly discuss some of the other environmental issues associated with the Original Proposed Route Alternative. Advantages of this alternative include that it would require no construction along road rights-of-way; would cross the least number of waterbodies (14); it would not require construction within 50 feet of any residences or businesses; and it has only 5 cultural resource sites that require additional investigation, none of which are National Historic Landmarks (see table 6.1.2-1).

Disadvantages of the Original Proposed Route Alternative are that it would require construction within and adjacent to the ConEd Westchester right-of-way (22.7 miles and 2.7 miles, respectively), would be the longest route (26.3 miles), would require the most land for construction (239.1 acres) and operation (159.4 acres), would require the largest amount of forest clearing (61.4 acres), would require construction across 2 major waterbodies that are over 100 feet wide (Furnace Brook and Teatown Lakes), would affect the largest number and amount of wetlands (28 and 7,127 feet, respectively), and would require construction near the Catskill Aqueduct (1.9 miles, between MPs 399.7A and 401.6A).

Even though there are advantages for this alternative over the 9/9A Proposal because of its more remote location, we do not believe they outweigh the risk to electric reliability that construction between the electric transmission towers would create. Because of our concern about these extremely important public utility resources (electric reliability and water supply for New York City) during construction of the Original Proposed Route Alternative, we do not recommend its use.

#### ConEd Offset/State Route 100 Alternative

The ConEd Offset/State Route 100 Alternative would also begin at MP 391.2 (MP391.6A) on the 9/9A Proposal and would continue northeastward for about 2,000 feet following the original route to the ConEd powerline right-of-way near MP 392.0A. However, it would be placed adjacent to the southeast side of the ConEd right-of-way at a distance of 100 feet from the center of the electric transmission towers for about 7.0 miles to the intersection of the powerline right-of-way and Taconic Parkway (approximate MP 399.0A). At this point, the alternative would leave the ConEd right-of-way and turn south along and outside of the west edge of the Taconic Parkway right-of-way for about 0.5 mile, and then follow the west side (southbound) of State Route 100 for about 0.4 mile before crossing to the east and continuing along the east side (northbound) for about 1.1 miles. At that point, the alternative would continue within the North County Trail for about 1.2 miles to the intersection of State Route 100 and State Route 9A at MP 401.3 on the 9/9A Proposal. The 10.6 miles of the ConEd Offset/State Route 100 Alternative would replace about 10.1 miles of the 9/9A Proposal between MPs 391.2 and 401.3.

Where the Original Proposed Route Alternative would involve construction about 50 feet from the center line of the electric transmission towers, the ConEd Offset/State Route 100 Alternative would be installed at an offset distance of about 100 feet from the ConEd powerline structures. The 100-foot offset would be measured from the center of the ConEd electric transmission tower on the southwest side of the existing electric transmission corridor. The ConEd Offset/State Route 100 Alternative would also require construction activity adjacent to or within the Taconic Parkway, State Route 100, and the North County Trail. This would require closure of portions of the trail for several weeks. These impacts would be similar to those described for the 9/9A Proposal where it would be installed within the bicycle paths. Construction along State Route 100 should be attempted with no or minimal lane closures.

TABLE 6.1.2-1  
Comparison of the Original Proposed Route Alternative  
with the Corresponding Segment of the 9/9A Proposal

Milepost/ Environmental Factor	Unit	9/9A Proposal	Original Proposed Route Alternative (within the ConEd right-of-Way)
<b>MPs 391.2 to 416.6</b>			
Total length	mi	25.4	26.3
Total length within the ConEd right-of-way	mi	0.0	22.7
Total length within 300 feet of the ConEd right-of-way	mi	2.7	2.7
Total length adjacent to Catskill Aqueduct	mi	0	1.9
• Total length within highways	mi	8.8	0.0
• Total length within bicycle paths	mi	7.2	3.2
Estimated land required for construction <u>a/</u>		136.2	239.1
Estimated land required for operation <u>b/</u>	ac	138.0	159.4
Estimated forest clearing	ac	33.0	61.4
• Total waterbody crossings	no	31	14
Less than 10 feet wide	no.	16	10
Between 11 and 50 feet wide	no.	13	
Between 50 and 100 feet wide	no		
Over 100 feet wide	no		2
Total wetlands crossed	ft	4,413	7,127
Number of wetlands	no	13	28
Cultural resource sites identified requiring additional investigation	no	21	5 <u>c/</u>
• Residences within 50 feet of the construction work area	no.		0
Businesses within 50 feet of the construction work area	no	33	0
Federally listed endangered and threatened species that potentially occur in the vicinity of the project	no	2	0

a/ Construction acreage based on an average width of 44.2 feet for the 9/9A Proposal, 75 feet for the Original Proposed Route Alternative.

b/ Permanent acreage based on an average width of 49.8 feet for the 9/9A Proposal, 50 feet for the Original Proposed Route Alternative.

c/ Millennium did not have permission to conduct shovel testing along the powerline corridor, so this number may need modification.  
NA = not available

The ConEd Offset/State Route 100 Alternative would decrease the risk to the transmission lines and towers associated with construction compared to the Original Proposed Route Alternative since this alternative would require construction at a greater distance from the towers in most instances. The ConEd Offset/State Route 100 Alternative would place the pipeline 100 feet from electric tower center lines whereas the Original Proposed Route Alternative would place the pipeline at distances which ranged from about 40 to 50 feet from tower center lines (the towers are separated from each other by distances that range from 80 to 175 feet). Also, if the pipeline was placed 100 feet from the centerline of the towers, minimal construction workspace would be directly below the electric lines.

Advantages of the ConEd Offset/State Route 100 Alternative over the 9/9A Route are that it would require less construction along highways than the 9/9A Proposal (1.5 miles), would require less construction along biking trails (1.2 miles), would not affect Van Cortlandt Manor, and would cross the Old Croton Aqueduct where it is deeply buried (MP 395.5A) rather than at a point where the Old Croton Aqueduct is at the surface (MP 397.4). It would also eliminate the need to construct within 50 feet of four residences and five businesses along the 9/9A Proposal (see table 4.7.2-1). However, it would require construction within 50 feet of two other residences.

Disadvantages of the ConEd Offset/State Route 100 Alternative include that it would be about 0.4 mile longer than the 9/9A Proposal, would require more land for construction (96.4 acres) and the permanent right-of-way (64.2 acres); would require more construction adjacent to the ConEd right-of-way than the corresponding segment of the 9/9A Proposal (7.0 miles compared to 0 miles); would require two major waterbody crossings (Furnace Brook and Teatown Lakes) that would be crossed using an open-cut; and would cross the larger amount of NWI wetlands (4) (see table 6.1.2-2).

Milepost/ Environmental Factor	Unit	Route 9/9A	ConEd/State Route 100 Alternative
<b>MPs 391.2 to 401.4</b>			
• Total length	mi.	10.2	10.6
• Total length within or adjacent to the ConEd right-of-way	mi.	0.0	7.0
• Estimated land required for construction <sup>a/</sup>	ac.	61.2	96.4
• Total waterbody crossings	no.	14	6
Less than 10 feet wide	no.	11	4
Between 11 and 50 feet wide	no.	1	0
Between 50 and 100 feet wide	no.	1	1
Over 100 feet wide	no.	1	2
• NWI wetlands crossed	no.	0	4
• Total length within or along highways	mi.	6.4	1.5
• Residences within 50 feet of the construction work area	no.	4	2 (estimated)
<sup>a/</sup> Construction acreage based on an average width of 49.5 feet for Route 9/9A and 75 feet for the ConEd/State Route 100 Alternative.			

Another disadvantage of the ConEd Offset/State Route 100 Alternative is that the terrain and geology along much of this alternative would be like that found along the Original Proposed Route Alternative. Along the ConEd corridor, the terrain is very hilly and rugged, and bedrock is usually exposed at the surface. Blasting would probably be required to construct most of the route, although there may be places where the rocsaw trencher or other mechanical means of excavating the trench may be feasible to

reduce the need for blasting. Also, because the terrain is rugged, a construction right-of-way that is greater than 75 feet wide might be required for two-tone construction and rock storage. Blasting may also be needed to create these more level work areas. This could increase the land requirements for the construction right-of-way by about 33 percent along the portion of the ConEd Offset/State Route 100 Alternative that would be adjacent to the ConEd corridor.

Procedures for blasting near electric powerlines exist. ConEd provided us with its Blasting Procedures in its November 7, 2000 data response. It stated that procedures such as these are used when it conducts blasting along its rights-of-way, including a replacement project ConEd plans to complete within the Westchester right-of-way near MPs 403.4 and 404.2. These procedures include the following general guidelines:

- Any drilling boom or other construction equipment must maintain 25 feet of clearance from energized conductors.
  - All construction equipment must be grounded.
  - Blasting operations must not compromise the integrity of the rock outside the cut. If the specific rock blast/cut area has any influence on stability or bearing capacity of adjacent tower foundations, it would be of concern. Horizontal offsets, elevation differences and/or slopes should be analyzed; and at a minimum, plan and cross section drawings should be required to be studied by ConEd personnel.
- Vibration velocities will be limited to 2 inches per second, as per New York State Specification.
- Non-electric blasting caps shall be used in the area of energized conductors.
  - Ongoing stray current testing shall be performed.
  - A ConEd safety inspector is required at owner/operator's expense during blasting operations inside ConEd right-of-way.

We believe that Millennium could use similar procedures for construction of the ConEd Offset/State Route 100 Alternative and that this would mean that procedures ConEd considers safe to use would be employed by Millennium for blasting within the ConEd Westchester right-of-way.

However, the ConEd Offset/State Route 100 Alternative would avoid most construction within the ConEd Westchester right-of-way, although there may be some overlapping of the outside edge of the ConEd right-of-way. If the ConEd Offset/State Route 100 Alternative is used, it would extend construction adjacent to the ConEd Westchester right-of-way for 7.0 miles more (along the ConEd Offset/State Route 100 Alternative) than the entire 9/9A Proposal as proposed (2.7 miles) to a total of about 9.7 miles for the entire project. However, the length of pipeline construction adjacent or parallel to the electric corridor would be about 13 miles less than that required for the Original Proposed Route Alternative.

The ConEd Offset/State Route 100 Alternative would avoid construction within about 2.1 miles of the Route 9 right-of-way between MPs 391.8 and 394.2 and about 4.3 miles of the State Route 9A right-of-way between MPs 397.0 and 401.3. It would still require construction for about 2.4 miles within the State Route 9A/100 right-of-way between MPs 401.3 and 404.0. Since the alternative would avoid construction in the U.S. Route 9 and State Route 9A segments, it would also avoid installing the pipeline under the road surface under overpasses at 4 locations. These locations are: Watch Hill Road (MP 392.3), Warren Road (MP 393.3), Hawkes Avenue (MP 398.4), and Ryder Road (MP 399.6). Also avoided by the ConEd Offset/State Route 100 Alternative are potential ramp closures at 3 locations: on U.S. Route 9, the on ramp

for State Route 9A (MP 392.8); on State Route 9A, the on and off ramps for Cedar lane (MP 397.8); and on State Route 9A, the on and off ramps for State Route 133 (MP 399.9).

Analysis of traffic along northbound U.S. Route 9 and State Route 9A and southbound State Route 9A/100 is presented in section 5.7.4. Within the U.S. Route 9 segment, traffic backups are not estimated to be significant and there are good alternate routes for motorists, including an alternate for the one proposed ramp closure (U.S. Route 9 northbound at New York and Albany Post Road, MP 392.7). Peak delay times are estimated to range from no delay to up to a 10 minute delay at Croton Point Avenue during the 2.25-hour period following the evening rush hours. Also, because of the road configuration (which has flat curves, a full median, relatively flat shoulders and an 8-foot-wide breakdown lane) there would be adequate space for the proposed construction activities.

Traffic backups are not estimated to be significant along the northbound State Route 9A segment since traffic volumes are the lowest of the three roadway segments examined. No traffic backups were estimated by the modeling at any time except at the signalized intersections. However, the road configuration, which is winding with no breakdown lane and the anticipated increased need for blasting are estimated to cause greater construction challenges and delays than the other two road segments. There is limited width beyond the travel lanes and the approximately 2-foot-wide paved shoulder for construction workspace. Also, the road lanes are narrow with less lateral clearance along the edges. This lack of lateral clearance is known to reduce the vehicle capacity of travel lanes adjacent to construction zones, this contributes to increasing travel delays. Another difficulty with this segment of the proposed project is that there are no direct alternate routes which could act as a bypass for State Route 9A if motorists want to avoid the construction area and if backups occur. No significant impacts are expected at the five locations where open trenching would occur off the roadway at intersecting roads, although a timing restriction was suggested for the crossing of Croton Dam Road (State Route 134) in Ossining and may be used at other intersecting roads (see section 5.7.4).

The southbound section of State Route 9A/100 affected by the proposed construction has gentle curves, flat terrain, narrow shoulders with no breakdown lane and a guardrail median. Even though there is limited paved shoulder width, adjacent areas are relatively flat and free from obstructions including trees and rock outcrops compared with the segment along State Route 9A. More lateral clearance should be available after placement of construction equipment and traffic control devices than there would be along State Route 9A, but not as much as there would be along U.S. Route 9. Minimal delays of about 5 minutes are estimated for the hours following the morning rush hours. However, significant traffic backups are estimated for the evening peak traffic hours in the Town of Mount Pleasant from MP 402.5 to State Route 117 at MP 403.4 since Millennium only proposes to restrict construction activities during the morning peak traffic hours. This section of roadway has both morning and evening peaks. So, if construction was ongoing during the evening rush, then backups may cause about 25 minutes of delay for motorists. However, if construction activities were restricted during both the weekday morning (6 to 10 AM) and evening (3 to 7 PM) hours, this travel delay would not occur. Since this roadway is part of the emergency evacuation route for the Indian Point Nuclear Power Plant, having no lane closures during the evening rush hours would facilitate clearing the roadway more quickly than if construction activities were occurring during the evening peak traffic times. No direct alternative route has been identified that motorists might use to avoid the construction work area. See recommendation for additional timing restrictions for construction in section 5.7.4.

If the ConEd Offset/State Route 100 Alternative was used, then roadside construction would be reduced to the 2.4-mile-long segment adjacent to southbound State Route 9A/100. If the additional restrictions for the time during the weekday when construction could occur are used, then Millennium's

workday would be reduced from 20 to 16 hours. But, effectively, the actual working time would be further reduced since Millennium would have to set up and clear away its workspace and the traffic safety devices marking the workspace twice a day rather than once a day. Therefore, the rate of construction along this portion of the project would be less than that estimated for a 20-hour day.

Although the ConEd Offset/State Route 100 Alternative would require disturbing about 1.2 miles of a bike trail, its use would minimize the use of roadways as workspace.

The two major water bodies that would be crossed by this alternative, Furnace Brook and Teatown Lakes, would be crossed by open cut. This crossing method at these waterbodies was reviewed by the NYSDEC and approved in section 401 Water Quality Certificate issued December 8, 1999.

We note that one residence appears to be within 50 feet of the construction right-of-way that would be required for the ConEd Offset/State Route 100 Alternative near MP 392.5A. If this is the case, then the right-of-way could be narrowed for a distance of 100 feet either side of the residence to increase the separation between the house and the workspace. Since the construction workspace would remove some of the existing tree screening between the residence and the ConEd right-of-way, Millennium must offer to plant fast growing trees or shrubs within the temporary work spaces where vegetative screening was removed, as recommended in the DEIS.

### Summary

Our analysis indicates that the 9/9A Proposal would have the most impact on the built environment (e.g., highways, residences, and businesses). These impacts include traffic disruptions on U.S. Route 9 (2.1 miles), State Route 9A (4.3 miles), and State Routes 9A and 100 (2.4 miles); temporary loss of use of segments of the bicycle paths (7.2 miles); and construction disturbance to four residents and 33 businesses that are adjacent to the construction right-of-way, particularly in Croton-On-Hudson, Ossining, and Briarcliff Manor. Also, two federally listed threatened or endangered species may be within the project area.<sup>4/</sup>

All of the alternatives and the proposed route would have significant impacts related to their construction. These impacts are different for each route because of the differences in the land use through which they traverse. However, the 9/9A Proposal would affect the least amount of land, forests, and wetlands. We recognize that pipeline construction along U.S. Route 9, State Route 9A, and State Route 9A/100 would cause inconvenience and traffic delays, and would be noisy. Our analysis of traffic impacts indicates that traffic disruption would vary depending on the time of day and location of the construction zone (see section 5.7.4). If blasting is required, the time needed to complete construction along these roadways may be longer than estimated (3 months). Additional significant impacts on traffic are expected since traffic in both directions on the roads would be stopped during blasting.

Millennium would install the pipeline along U.S. Route 9, State Route 9A, and State Route 9A/100 in compliance with traffic control and maintenance plans that would be prepared in consultation with the

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4/ The proposed crossing of the Croton River (a waterbody that is over 100-foot-wide at the crossing location) would be by a horizontal directional drill. This would reduce the impact on the federally listed threatened and endangered species that may use the river (the bald eagle and short-nose sturgeon). It should also result in no impact to the wetland and the Croton River since no excavation in the wetland or river would be needed to complete the crossing.

NYSDOT to maintain safe and effective traffic control during construction activities. These plans would be approved by the NYSDOT before construction could begin (see section 2.3.2). We understand that the NYSDOT will have an inspector on site to make sure that pipeline construction occurs according to the NYSDOT permit and that all construction activity and equipment are cleared from the roadways during the times when construction is prohibited (NYSDOT, 2000).

The noise associated with construction equipment, the rocsaw trencher, and blasting would be annoying to many people (see section 5.10.2), as would the increased smell from equipment exhaust (see section 5.10.1). Noise levels may rise significantly and air pollution levels slightly because of construction. But, since the active construction area would move as pipeline installation progresses, the impact of noise and air pollution would move, too. These impacts would be localized and should last a few days in any one location. Similar noise and air impacts would be expected at all project locations where there is active construction, not just those where roadside construction is occurring.

Unavoidable traffic impacts are expected along U.S. Route 9, State Route 9A, and State Route 9A/100 during the construction period. We have made recommendations to further restrict construction times on weekdays to mitigate the development of traffic backups (see section 5.7.4). If the NYSDOT concurs with these recommendations they may be incorporated into the final construction work plans. We believe that with the use of the recommended mitigation the 9/9A Proposal is a viable option.

The ConEd Offset/State Route 100 Alternative would require construction along about 7 more miles of the ConEd Westchester right-of-way than the 9/9A Proposal. It would eliminate construction between MPs 391.2 and 401.3 (10.1 miles) of the 9/9A Proposal, including 6.4 miles of construction which would require the use of road rights-of-way as workspaces on U.S. Route 9 and State Route 9A. We have recommended certain timing restrictions for construction along the 2.4-mile-long segment of State Route 9A/100, subject to approval of the NYSDOT. This segment of the proposed project would be replaced with about 10.6 miles of the alternative route adjacent to the ConEd Westchester right-of-way, State Route 100, and the North County Trail, as previously described. We believe that Millennium could use the construction and design procedures identified in the MOU it developed with the PSCNY for construction adjacent to ConEd's Westchester corridor between MPs 404.1 and 406.8 of the 9/9A Proposal for construction adjacent to the additional 7 miles of powerlines affected by the ConEd Offset/State Route 100 Alternative. If the PSCNY is willing to revise its MOU to incorporate construction of this alternative route, then we believe that the ConEd Offset/State Route 100 Alternative is a viable option.

## **6.2 ROUTE VARIATIONS**

### **6.2.1 Briarcliff Commons Variation (MP 401.3 to 401.5)**

The Briarcliff Commons Homeowners Association identified a route variation in Westchester County to minimize construction impacts on the Briarcliff Commons condominium complex located near the State Routes 9A and 100 interchange. The proposed route follows a sewer line through a wooded area that includes forested wetlands. In alignment sheets filed in December 2000, Millennium shows this variation as part of its proposal. The Briarcliff Commons Variation would deviate from, but basically parallel, the 9/9A Proposal between MPs 401.3 and 401.5. However, near MP 401.3, it would cross the southbound State Route 100/northbound State Route 9A ramp with an open cut, opening half of the road surface at a time. Then it would cross the Pocantico River (MP 401.35) for the first time within the highway median along the north side of State Route 9A. State Route 9A would be crossed by shifting into the center lane of State Route 100 for a short distance to pass under an overpass. The pipeline would then be placed in the shoulder of the west side of State Route 100. Another shift would be made to leave the shoulder to make the second crossing

of the Pocantico River (MP 401.45). It would then rejoin the shoulder of State Route 100 until it rejoins the proposed route at MP 401.5 (see figure 6.2.1-1).

The Briarcliff Commons Variation would affect about 1.5 acres of forest, 0.1 acre of open land, and 0.7 acre of industrial/commercial land during construction. It would also affect an additional 0.18 mile of the North County Trail that would not be affected by the proposed route. The variation would require about 2.3 acres of land for construction (0.4 acre more than the corresponding segment of the 9/9A Proposal) and 1.7 acres of land for the permanent right-of-way (the same acreage as the corresponding segment of the 9/9A Proposal). The total length of the variation would be about the same length as the corresponding segment of the 9/9A Proposal (see table 6.2.1-1). The proposed route would require one road bore across State Route 9A just to the north of the ramp from southbound State Route 100 onto northbound State Route 9A. No road bores are proposed for the variation.

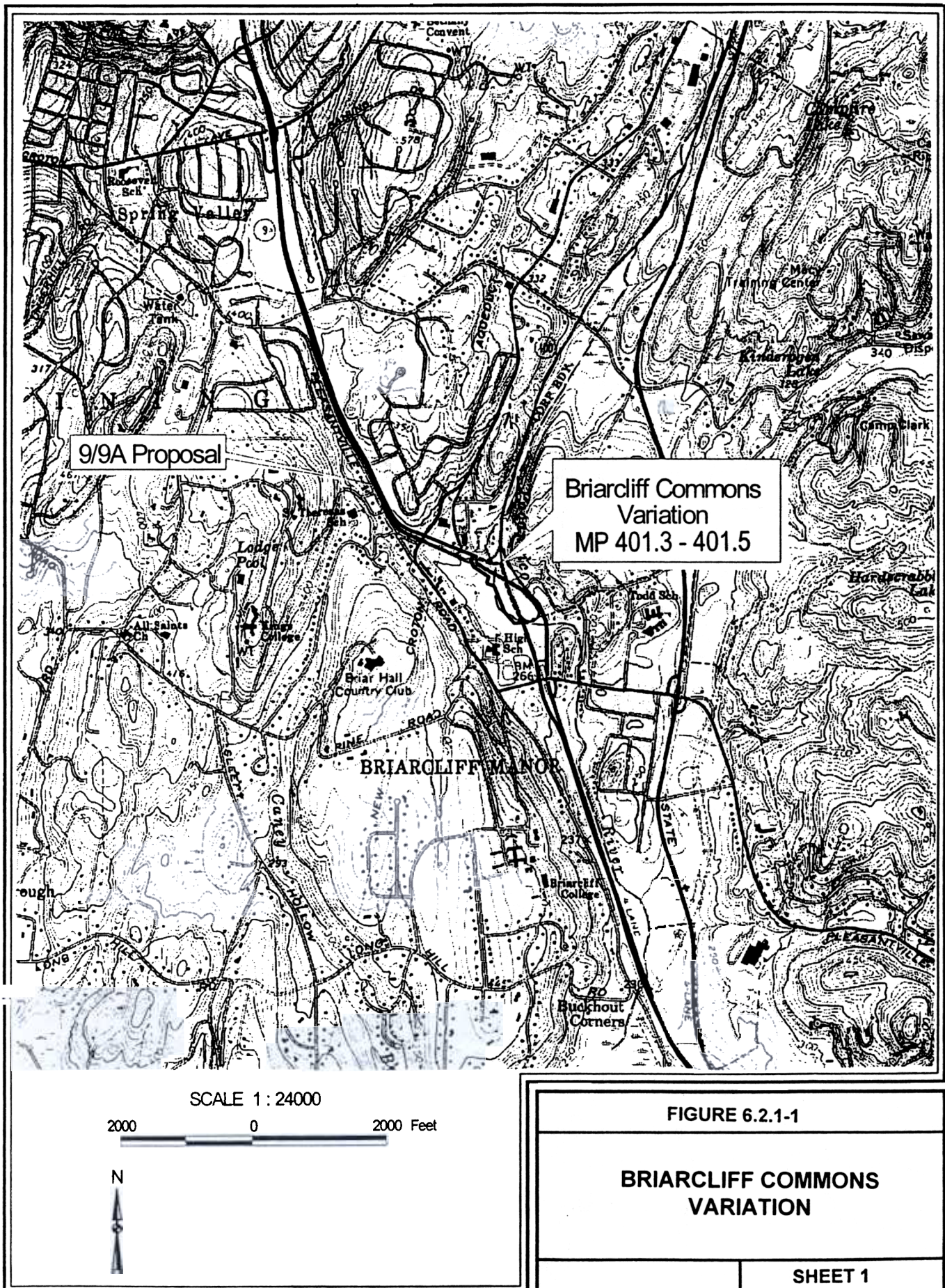
TABLE 6.2.1-1 Comparison of Briarcliff Commons Variation with the Corresponding Segment of the 9/9A Proposal			
Milepost/Environmental Factor	Unit	9/9A Proposal	Briarcliff Commons Variation
<b>MPs 401.3 to 401.5</b>			
• Total length	ft.	1,460	1,450
• Estimated land required for construction	ac.	1.9	2.3
• Estimated land required for operation	ac.	1.7	1.7
• Length adjacent to existing right-of-way	mi.	0.28	0.27
• Length within road right-of-way	feet	0	1,300
• Length along North County Trail	mi.	0	0.18
• Waterbodies crossed	no.	1	2
• Wetlands affected	ac.	1.04	0
• Residences within 50 feet of the construction work area	no.	0	0
• Road bores	no.	1	0
• Landowners affected by the permanent right-of-way	no.	2	2

The variation would require two crossings of the Pocantico River near MPs 401.3 and 401.4. The Pocantico River is a warmwater fishery, has a state water quality classification of B (fresh surface water: best usages are primary and secondary contact recreation and fishing, and water is suitable for fish propagation and survival), and is about 25 feet wide at both crossing locations. Millennium would complete both of these crossings using dry crossing techniques. This would replace one 8-foot-wide crossing of the tributary of the Pocantico River near MP 401.4.

The Briarcliff Commons Variation would not affect any wetland and would replace proposed construction which would affect a total of 1.04 acres in two wetlands. Wetland W05WCR at MP 401.37 has a wetland classification of PEM and would have a crossing length of 45 feet and 0.05 acre would be affected. Wetland W06WCR at MP 401.38 has a wetland classification of PFO/PEM, and would have a crossing length of 860 feet (0.99 acre affected).

Along both the proposed route and the variation, there is one previously reported cultural resource site and a survey is pending.

No additional landowners, or federally or state listed threatened or endangered species would be affected.



The advantage of the variation is that it would not require construction though about .04 acres of wetlands.

The disadvantages of the variation are that it would require two crossings of the Pocantico River where the waterbody is of intermediate size (both 25 feet wide) at both locations, whereas the proposed route would require crossing a tributary to the Pocantico River that is narrower (8 feet). Also, the variation would require construction along about 1,300 additional feet of road right-of-way, thereby adding to the total amount of roadside construction. The variation would require about 0.18 mile of additional construction along the North County Trail, and an open cut crossing of the southbound State Route 100/northbound State Route 9A ramp. At this location, the open cut of the State Route 100 southbound ramp would be at the point where the ramp enters northbound State Route 9A. As proposed, the ramp would be open cut, but half of the ramp would remain open for use. Motorists driving from State Route 100 are about to merge into traffic going northbound on State Route 9A and may be distracted by construction activity. Our traffic analysis recommends closing the ramp and detouring traffic, or to bore the crossing if it is feasible.

Millennium states that the Village of Briarcliff Manor opposes the 9/9A Proposal in general and is not likely to support a reroute in this corridor. The variation was proposed by the Briarcliff Commons Homeowners Association to move the pipeline farther from the development and more adjacent to the road right-of-way.

Since the Briarcliff Commons Variation would eliminate the impact on about 1.04 acres of wetlands, we recommend that **Millennium use this variation. Millennium should bore the southbound State Route 100/northbound State Route 9A ramp (MP 401.3) or explain why it is not feasible prior to construction for review and written approval by the Director of OEP.**

#### 6.2.2 Persico Variation (MP 408.7 to 409.0)

The Persico Variation would deviate slightly from, but be basically parallel to, the 9/9A Proposal between MPs 408.7 and 409.0. According to Mr. Persico, installation of the pipeline as originally proposed could impede plans for future use of his commercial property in the Village of Elmsford (see figure 6.2.2-1).

The Persico Variation would deviate from the 9/9A Proposal at about MP 408.7, moving southeast for about 300 feet through a salvage yard. It would then turn south and cross under the Cross Westchester Parkway (I-287) beneath a bridge, and would then continue south down Vreeland Avenue to a parking lot on the north side of White Plains - Tarrytown Road. A bored crossing would be used to cross White Plains - Tarrytown Road which would be staged in the parking lots on both sides of the road. Construction on Vreeland Avenue would be confined to the road right-of-way (the area between the curbs only) with the pipeline being placed under the existing road surface. Portions of this section of Vreeland Avenue would be closed to through traffic as construction moves down the street for a distance of 1 and ½ blocks. Millennium states that access to businesses along Vreeland Avenue would be maintained during construction.

All of the land affected by the variation would be industrial/commercial including a salvage yard, streets, and parking lots. The total length of the variation would be 1,730 feet (120 feet longer than the corresponding segment of the 9/9A Proposal) (see table 6.2.2-1). The variation would require 1.8 acres of land for construction (0.2 acre more than the corresponding segment of the 9/9A Proposal) and 2.0 acres of land for the permanent right-of-way (0.2 acre more than the corresponding segment of the 9/9A Proposal).

No wetlands, waterbodies, or protected species would be affected by either the variation or the 9/9A Proposal.

No previously recorded cultural resource sites would be affected, but a survey is pending. Since most of the area that would be affected by the variation is paved, Millennium proposes to monitor construction in the street and parking lots for possible cultural resources.

TABLE 6.2.2-1 Comparison of Persico Variation with the Corresponding Segment of the 9/9A Proposal			
Milepost/Environmental Factor	Unit	9/9A Proposal	Persico Variation
<b>MPs 408.7 to 409.0</b>			
• Total length	ft.	1,610	1,730
• Estimated land required for construction	ac.	1.6	1.8
• Estimated land required for operation	ac.	1.8	2.0
• Length adjacent to existing right-of-way	mi.	0.22	0.28
• Waterbodies crossed	no.	0	0
• Wetlands affected	ac.	0	0
• Residences within 50 feet of the construction work area	no.	0	0
• Road bores	no.	1	1
• Landowners affected by the permanent right-of-way	no.	3	3

The major difference between the proposed route and the variation is that the proposed route would use the parking area at the edge of the Persico property and the variation would require the use of Vreeland Avenue for construction.

The advantage of the variation is that it would minimize impact on the Persico property which the landowner states is going to be developed. Millennium states that it and Mr. Persico discussed the variation with Mr. Charles DeAngelis, the Mayor of the Village of Elmsford, and that Mr. Persico explained that the proposed pipeline alignment could impede his future development plans. Millennium states that the Mayor continued to express overall support for the original alignment along the ConEd corridor, but that the village probably would not oppose the variation.

The disadvantages of the Persico Variation are that it would temporarily close portions of Vreeland Avenue to through traffic during installation of the pipeline. This may impact businesses along the avenue. One additional landowner would be affected directly by construction of the variation. Eighteen additional landowners would be located directly adjacent to the construction right-of-way and would be affected by street closings.

We conclude that the Persico Variation would result in additional impacts to landowners and businesses located along Vreeland Avenue that would not be affected by the 9/9A Proposal. Because we have no evidence of future expansion plans on the Persico property and the Persico Variation would affect additional landowners and business entities, we do not recommend the Persico Variation. However, during easement negotiations between Millennium and Mr. Persico, future expansion plans could be identified and potentially accommodated during the final design phase.

No previously recorded cultural resource sites would be affected, but a survey is pending. Since most of the area that would be affected by the variation is paved, Millennium proposes to monitor construction in the street and parking lots for possible cultural resources.

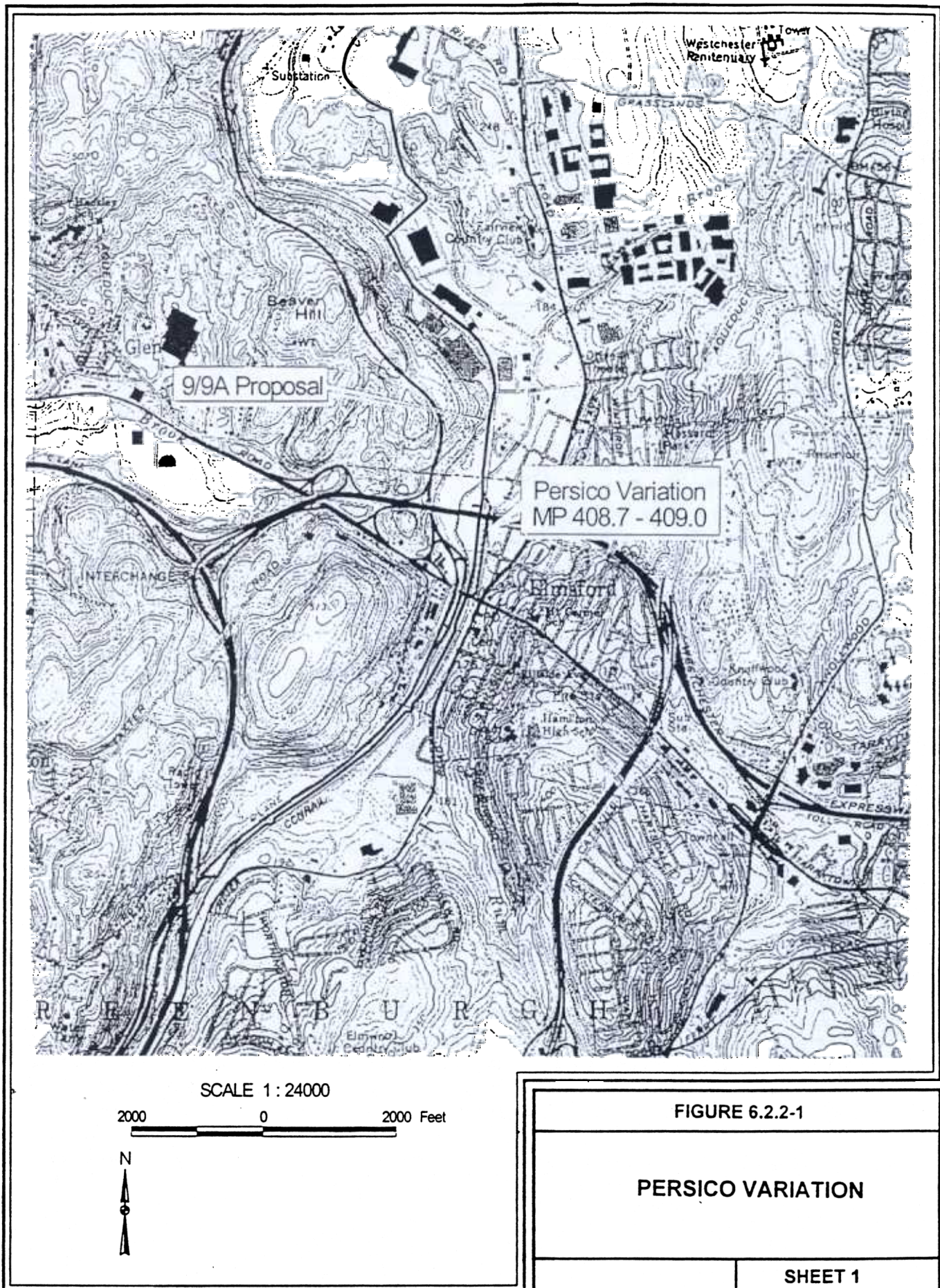
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## **7.0 CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS OF THE PROPOSED ACTION**

Millennium's 9/9A Proposal would require construction of a 25.4-mile-long, 24-inch-diameter pipeline through communities in Westchester County, New York. We evaluated information provided by Millennium; conducted field investigations, studies, literature research, traffic analyses, and alternative analyses; and reviewed comments from Federal, state, and local agencies and the public. We conclude that even though the 9/9A Proposal would result in short-term, locally significant, unavoidable adverse environmental impact, it is an appropriate route for the proposed deliveries to Mount Vernon, New York. As part of our analysis, we developed specific mitigation measures and evaluated route alternatives and variations. We are recommending mitigation measures that can be attached as conditions to any authorization issued by the Commission to reduce environmental impacts.

About 8.8 miles of the 9/9A Proposal would require roadside construction along U.S. Route 9 (northbound), State Route 9A (northbound), and State Routes 9A/100 (southbound). Roadside construction typically causes additional traffic and noise impacts on the communities in which it occurs. Varying amounts of traffic delays can be expected depending on the time of day and location of construction activities. These delays have been predicted by our traffic analysis. The area with traffic delays would move as construction is completed in one area and moves to the next. However, based on our traffic analysis, we have made some recommendations to further restrict the time when construction can occur during the weekdays to mitigate the development of vehicle queues (backups). This should help to reduce backups and travel delays. Also, construction noise would probably be annoying to nearby residents; however, this also would move with construction. The 9/9A Proposal would have the least permanent impact on the natural environment and would have the least land requirements for both the construction and permanent rights-of-way of the evaluated alternatives. The traffic and noise impacts would be temporary and would only last during the time of construction and the 9/9A Proposal would have the least impact on the natural environment.

We evaluated two principal alternatives to the proposed route: the Original Proposed Route Alternative and the ConEd Offset/State Route 100 Alternative. They would have differing unavoidable impacts because of the differing terrain and land use that would be affected along them. We do not recommend using the Original Proposed Route Alternative because of concerns about electric reliability during construction of the pipeline as originally proposed.

The ConEd Offset/State Route 100 Alternative would move the pipeline to parallel the ConEd right-of-way and State Route 100 between MPs 391.2 to 401.4. This alternative would follow the ConEd right-of-way (7 miles), the Taconic Parkway (0.5 miles), State Route 100 (1.5 miles), and the North County Trail (1.2 miles). It would replace about 10.2 miles of the 9/9A Proposal and would require the least amount of roadside construction (1.5 miles versus 6.4 miles for the corresponding segment of the 9/9A Proposal) although the pipeline would be installed within the bicycle path of the North County Trail along State Route 100. This alternative would also avoid traffic impacts related to roadside construction and disruption in the communities most affected by the 9/9A Proposal in Croton-on-Hudson, Ossining, and Briarcliff Manor north of MP 401.3 (where the ConEd Offset/State Route 100 Alternative ties back into the 9/9A Proposal). Traffic issues south of this point would be the same as for the proposed route, including use of one southbound lane of State Route 9A/100 for construction.

The ConEd Offset/State Route 100 Alternative has less residential and commercial development adjacent to it, but would affect more wetlands and forest than the 9/9A Proposal. Also, it would require open cut crossings of Furnace Brook and Teatown Lakes. Since we acknowledge that the ConEd powerline right-

of-way is a sensitive utility resource and needs to be protected, we have evaluated placing the pipeline adjacent to the ConEd right-of-way and about 100 feet from the electric towers instead of between and within 50 feet of the towers. We believe that pipeline placement on only one side of and at a greater distance from the powerline may help alleviate many concerns about construction near electric transmission lines and towers. The PSCNY may be able to expand its Memorandum of Understanding with Millennium to incorporate the ConEd Offset/State Route 100 Alternative. If the PSCNY can do this then this route is a viable option that would help minimize impacts on the communities of Croton-on-Hudson, Ossining, and Briarcliff Manor.

### **Geology and Soils**

No mineral resources would be crossed by the 9/9A Proposal. Although 94 percent of the pipeline route could require blasting, Millennium proposes to use specialized equipment for excavation of the ditch in most locations and anticipates that use of blasting would be limited to one area in Sprain Ridge Park between MPs 414.6 and 416.1. We believe additional blasting may be required where the pipeline would be installed along the roadside of State Route 9A. However, blasting would only be used as a last alternative and would be done in accordance with all applicable Federal, state, and local regulations.

Construction of the pipeline would disturb soils and increase the potential for soil erosion, compaction, and loss of soil productivity or damage to existing drainage tiles. Millennium is required to complete final grading within 10 calendar days of backfilling, weather and soil conditions permitting, to minimize the time bare soils are exposed. Millennium would minimize impact on soils by implementing the procedures identified in its ECS, which incorporates our Plan. We believe that impact on soils would be minimized with these measures.

### **Groundwater**

The 9/9A Proposal would cross 12,038 feet of the Croton Primary Aquifer beginning at MP 394.5. This aquifer underlies the Croton River and adjacent land, and is used for public water supply. One commentor noted that this aquifer supplies water to residents of Briggs Landing and Warren Roads. Millennium found no potable water wells and no residences within 150 feet of the construction work area at this location. Based on discussions with landowners and local officials, Millennium has not identified any supply wells or springs within the 9/9A Proposal area of potential impact.

In response to our recommendations on the DEIS about refueling, Millennium revised its ECS to include provisions that: containment dikes around fuel tanks should have capacity for at least 100 percent of the maximum storage volume; refueling areas should be located hydraulically down gradient and outside of aquifer protection areas, wherever possible, and if located within an aquifer protection area, the refueling area should be lined; all equipment should be inspected daily for leaks before work within an aquifer protection area; and all vehicles working within aquifer protection areas and public water supply watersheds shall have sorbents to clean up spills that might occur. We believe these measures would adequately minimize any potential impact on groundwater.

### **Surface Water and Fisheries**

The 9/9A Proposal would cross 31 waterbodies in the Hudson River Basin. Twenty-seven of these waterbodies are perennial and four are intermittent. Millennium proposes to cross all waterbodies using dry crossing techniques, unless there is no perceptible flow at the time of the crossing, and would cross warmwater fishery streams between June 1 and November 30, and cool/cold water fishery streams between June 1 and September 15.

The Croton River (MP 396.8) is 290 feet wide at the proposed crossing and would be crossed within the area designated as the Croton River and Bay Significant Coastal Fish and Wildlife Habitat, the Significant Habitats and Habitat Complex of the New York Bight Watershed, and designated EFH. Millennium would use a horizontal directional drill to avoid direct impact on the Croton River, and associated EFH and wetlands. We believe that the proposed measures (including implementation of Millennium's ECS, our Procedures, and proposed dry construction techniques) would minimize impact on these waterbodies and fishery resources. We have recommended that Millennium file a site-specific contingency plan for crossing the Croton River in the event the directional drill is unsuccessful, to be approved prior to constructing an alternative crossing.

The 9/9A Proposal would cross the Grassy Sprain Reservoir watershed for approximately 750 feet. According to City of Yonkers officials, the reservoir is no longer used as a source of public drinking water. However, Millennium would install and maintain erosion control devices in this area in accordance with its ECS, our Procedures, and its SPCC Plan.

### **Aqueducts**

The 9/9A Proposal would cross the Old Croton Aqueduct at MP 397.4; the New Croton Aqueduct at MPs 401.2, 410.3, and 413.8. The Old Croton Aqueduct is within a protective berm within a stream valley at the crossing location and there is a stream culvert at its base. Millennium proposes to cross the aqueduct and berm using a site-specific crossing plan and would work with the New York SHPO to develop a crossing plan for the associated state park. According to correspondence received from the NYCDEP, the New Croton Aqueduct depths are 95, 40, and 140 feet at the three crossing locations (aqueduct station numbers 322+00, 732+00, and 895+00, respectively). The NYCDEP has indicated that the proposed crossings should not be a problem since the pipeline trench would only be about 6 feet deep.

### **Wetlands**

According to field delineations conducted by Millennium, the 9/9A Proposal would cross 12 wetlands, affecting about 3.3 acres during construction. Operation would affect a total of about 2.4 acres of wetlands. All construction and restoration in wetlands would be in accordance with Millennium's ECS and our Procedures, as supplemented with its site-specific mitigation measures and our recommendations. We believe that this would minimize short- and long-term impact on the wetlands and wetland habitats.

The 9/9A Proposal would also cross through the buffer zones of five NYSDEC regulated wetlands. Since these wetlands would not be affected by construction and Millennium's ECS requires that sediment barriers be installed along the edge of the construction work area as necessary to prevent sediment flow into adjacent wetlands, there would be no impact on these wetlands.

### **Vegetation and Wildlife**

Short-term impacts on vegetation and wildlife resources are expected to be minimal since 88 percent of the 9/9A Proposal would parallel, or be adjacent to or within, existing utility or transportation corridors. Long-term impacts associated with operation of the 9/9A Proposal include the loss of approximately 22.1 acres of upland forest habitat. Of this total, approximately 18.4 acres would be within the permanent right-of-way. The remaining 3.7 acres would be temporary work space and would be allowed to revert to forest following the completion of construction. Since most of the vegetation disturbed and habitat impacted would be within or adjacent to existing right-of-way, there would be insignificant habitat fragmentation and only minor impacts on wildlife and habitat.

## Endangered and Threatened Species

Millennium has consulted informally with the FWS and NMFS regarding the presence of federally listed or proposed species in the project area. Based on this consultation, it has been determined that four Federal or state listed endangered or threatened species could possibly occur in the vicinity of the project area. These species are the Federal and state threatened bald eagle, Federal and state endangered shortnose sturgeon, state threatened least bittern, and state endangered Torrey's mountain mint.

Three of these species (the bald eagle, shortnose sturgeon, and least bittern) potentially occur only in the vicinity of the Croton River. Since the Croton River and associated wetland would be directionally drilled, there would be no impact on these three species or their habitat. The fourth species (Torrey's mountain mint) is known to occur in dry, rocky woodlands and meadows, but was not observed during appropriate field surveys. We believe that with the proposed mitigation there would be no impact on Federal and state threatened or endangered species.

## Land Use

The 9/9A Proposal would affect a total of 136.2 acres of land comprising 58.0 acres of industrial/commercial land, 34.3 acres of open land, 22.1 acres of forest, 21.4 acres of other land, 0.2 acre of residential land, and 0.2 acre of water. There was a concern that the construction or operation of the pipeline within U.S. Route 9, State Route 9A, and State Routes 9A/100 would interfere with the emergency evacuation route for the Indian Point Nuclear Power Plant. Construction within U.S. Route 9 and State Routes 9A would be within the northbound lanes, leaving both southbound available for an emergency evacuation. Construction within State Routes 9A/100 would require lane closing during non-peak traffic hours. We have recommended that Millennium consult with the FEMA regarding the development of an appropriate emergency evacuation plan and believe that, with appropriate construction shutdown procedures and construction timing restrictions, there would be no significant impact on the evacuation route in the event of an emergency.

## Residential and Commercial/Industrial Areas

Millennium identified 4 residences and 33 businesses that would be within 50 feet of the construction work area. There are no locations where construction would be within 25 feet of a residence. One of the concerns about the 9/9A Proposal was the removal of trees along State Route 9A, where the trees provide screening for residences along the highway. Millennium has identified each area where residences could be affected by tree removal and is working with landowners to either preserve the trees or replace them. To ensure that tree screening is preserved or restored wherever possible, we have recommended that Millennium file the site-specific plan developed with the NYSDOT to restore vegetative screening or to install screening fences near residences. We believe these measures would minimize impact to residential areas. Millennium met with several business owners who identified concerns about the location of the pipeline on their properties in light of future development. Millennium identified one route variation (the Persico Variation) and continues to work with certain property owners to address their concerns.

## Recreation and Public Interest Areas

The pipeline would cross 12 recreation and public interest areas. For many of these areas, Millennium has not yet identified specific mitigation for these crossings and would develop mitigation during final easement negotiations. For the areas where Millennium has proposed mitigation to reduce the short-term and long-term impact of the 9/9A Proposal on recreation and public interest areas crossed, we have

recommended that before construction, Millennium file with the Secretary all mitigation plans developed with the property owners.

## **Traffic**

A traffic study was conducted on those segments of the 9/9A Proposal where the pipeline would be placed within the roadways of U.S. Route 100, State Route 9A, and States Routes 9A/100 using data obtained from the NYSDOT and modeling methods defined in the 1987 Highway Capacity Manual. The study focused on the effects of shutting down one lane of traffic within these roadways and included current traffic volumes, accident data, and predicted traffic impacts (e.g., queues or backups) as a result of the one-lane shutdown, ramp closures, open cut road crossings, construction through signalized intersections, and road shutdowns as a result of blasting.

On U.S. Route 9 (where the pipeline would be installed adjacent to the northbound lane for approximately 2.1 miles between MPs 391.8 and 394.2), daily traffic volumes were 19,200 with an average calculated accident rate 2.2 times below that for similar highways as compiled by the NYSDOT. The closure of one lane was predicted to result in queues and an approximate 6-minute delay between 7 and 8:45 p.m. Millennium proposes to stop construction during the peak evening traffic hours (3 to 7 p.m.). We have recommended that Millennium stop construction between the hours of 3 and 8 p.m. unless otherwise approved or restricted by the NYSDOT. One on ramp would require closing, resulting in an estimated 5 to 8 minutes of additional travel time to detour around the ramp closure. No signalized intersections would be affected. The potential for blasting was considered moderate.

On State Route 9A (where the pipeline would be installed adjacent to the northbound lane for approximately 4.3 miles between MPs 397.0 and 401.3), the daily traffic volumes ranged between 15,000 and 17,300, with an average calculated accident rate 1.1 times above that for similar highways. No traffic delays were predicted as a result of the closure of one lane. Two on and off ramps would require closure, resulting in 4 to 16 minutes of additional travel time for detours. Construction would also cross through 3 signalized intersections. Based on modeling on one of these intersections (North State Road at MP 401.1), a delay of 75 seconds for the northbound lane during peak traffic would be acceptable considering the LOS for this lane at this intersection is F (the lowest level). However, for the southbound lane, a 170 second delay was predicted. Since these predicted impacts would be likely to also occur at the other signalized intersections, we recommended that Millennium avoid construction activities within 300 feet of the signalized intersections during the peak morning traffic hours unless otherwise approved or restricted by the NYSDOT.

The potential for blasting was considered high within this segment because of the narrow shoulders, lack of breakdown lane, and visible exposed ledge. If blasting is required, all lanes of State Route 9A would need to be closed for about 20 minutes. If one northbound lane is closed before and after blasting, the model predicted that a 20-minute closure would result in a maximum of 271 vehicles queuing in the northbound lane for 52 minutes and a maximum of 142 vehicles queuing in the southbound lane for 27 minutes. If both northbound lanes remain open the queue in the northbound lane would be reduced to a maximum of 136 vehicles for 26 minutes. We have recommended that Millennium prepare a blasting plan in consultation with the NYSDOT and that it include a provision to avoid a lane closure (for the construction work area) before and after any blasting.

On State Routes 9A/100 (where the pipeline would be installed adjacent to the southbound lane for approximately 2.4 miles between MPs 401.3 and 404.0), daily traffic volumes ranged between 20,000 and 22,000 with an average calculated accident rate 1.1 times below that for similar highways. The closure of one lane was predicted to result in queues and an approximate 5-minute delay between 10 and 11:45 p.m.

and a 20 to 25-minute delay between 3 and 8:15 p.m. We have recommended that Millennium stop construction during the peak evening traffic hours between 3 and 7 p.m. unless otherwise approved or restricted by the NYSDOT. One on ramp would require closing, resulting in an estimated 8 to 9 minutes of additional travel time. No signalized intersections would be affected. The potential for blasting was considered low.

Finally, since significant traffic delays could be expected at locations where Millennium proposes to open cut road crossings, we have recommended that Millennium file a traffic management plan for each road that it proposes to open cut.

### **Cultural Resources**

Millennium conducted cultural resources surveys of the construction right-of-way, extra work areas, and access roads except for approximately 1 mile where access was denied. The pipeline would cross two National Historic Landmarks and three NRHP-eligible-properties. A total of 15 other locations require additional cultural resource investigations.

To ensure that the Commission's responsibility under section 106 of the NHPA and its implementing regulations are met, and that Millennium complete all necessary surveys and other investigations to identify NRHP-listed or -eligible properties in the area of potential effect, we have recommended that construction be deferred until all cultural resource surveys, testing, and any required mitigation plans have been completed and the reports filed, along with SHPO comments, and that the Director of OEP reviews and approves all cultural resource reports and plans and notifies Millennium in writing that construction may proceed.

### **Air and Noise**

The emissions for construction vehicles and equipment should have an insignificant effect on air quality of the region. However, under certain meteorological conditions, there could be high temporary concentrations of pollutants in the vicinity of construction. No significant impact on air quality would occur during operation of the proposed pipeline.

Construction noise would be intermittent and would vary from hour to hour at any single location depending on the equipment in use and the operation being performed. Millennium provided an estimate for noise produced by the various pieces of construction equipment expected to be used along U.S. Route 9, State Route 9A, and State Routes 9A/100. The overall noise level in the vicinity of construction activities was estimated at an  $L_{dn}$  of 86.4 dBA over a 24-hour period, although noise levels would be higher at stationary noise receptors in the immediate vicinity of construction. Since construction would move at about 400 feet per day, the duration of exposure to high noise levels would be limited to a relatively short period of time. To minimize noise impacts at residences that may be affected by noise from the direction drilling rig at the Croton River, we have recommended that Millennium file a site-specific plan identifying how it would reduce construction noise during a directional drill.

### **Alternatives**

We evaluated two major route alternatives and two route variations to the 9/9A Proposal to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives were considered reasonable and practicable, and were compared to the corresponding segment of the proposed project. Because detailed surveys comparable to those provided by Millennium for the proposed route are unavailable for part of the ConEd Offset/State Route 100 Alternative (about 1.2 miles), our analysis is based on data from USGS topographic maps, NWI maps, aerial photos where available, and limited field

inspections. Based on this comparison of each alternative, we rejected the Original Proposed Route Alternative and recommended the use of the two route variations (Briarcliff Commons Variation and Persico Variation). It would also place the pipeline at a greater distance from the ConEd powerline structures, where proximity of the pipeline to the structures was considered a potential safety hazard. The PSCNY may be able to expand its Memorandum of Understanding with Millennium to incorporate the ConEd Offset/State Route 100 Alternative. If the PSCNY can do this then this route is a viable option that would help minimize impacts on the communities of Croton-on-Hudson, Ossining, and Briarcliff Manor.

## 7.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission certifies the proposed project, we recommend that the following measures be included as specific conditions to further mitigate the environmental impact associated with the construction and operation of the proposed project:

Millennium shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the SDEIS, unless modified by this Order. Millennium must:

- a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
- b. justify each modification relative to site-specific conditions;
- c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
- d. receive approval in writing from the Director of the OEP **before using that modification.**

The Director of OEP has delegation authority to take whatever steps are necessary to insure the protection of all environmental resources during construction and operation of the project. This authority shall allow:

- b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.

**Prior to any construction**, Millennium shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors, and contractor personnel will be informed of the environmental inspector's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

- 4 The authorized facility locations shall be as shown in the SDEIS, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of any construction**, Millennium shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by this Order. All requests for modifications of environmental conditions of this Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Millennium shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and

staging areas, pipe storage yards, new access roads, and other areas that will be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction** in or near that area.

This requirement does not apply to minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- implementation of cultural resources mitigation measures;
  - b. implementation of endangered, threatened, or special concern species mitigation measures;
  - c. recommendations by state regulatory authorities; and
  - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
- 6. Within 60 days of the acceptance of this certificate and **before construction** begins, Millennium shall file an initial Implementation Plan with the Secretary for review and written approval by the Director of OEP describing how Millennium will implement the mitigation measures required by this Order. Millennium must file revisions to the plan as schedules change. The plan shall identify:
  - a. how Millennium will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
  - b. the number of environmental inspectors assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
  - c. company personnel, including environmental inspectors and contractors, who will receive copies of the appropriate material;
  - d. what training and instructions Millennium will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);
  - e. the company personnel (if known) and specific portion of Millennium's organization having responsibility for compliance;
  - f. the procedures (including use of contract penalties) Millennium will follow if noncompliance occurs; and
  - g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

- i. the completion of all required surveys and reports;
  - ii. the mitigation training of onsite personnel;
  - iii. the start of construction; and
  - iv. the start and completion of restoration.
7. Millennium shall employ at least a team of (i.e., two or more or as may be established by the Director of OEP) environmental inspectors per construction spread. The environmental inspectors shall be:
  - a. responsible for monitoring and ensuring compliance with all mitigative measures required by this Order and other grants, permits, certificates, or other authorizing documents;
  - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
  - c. empowered to order correction of acts that violate the environmental conditions of this Order, and any other authorizing document;
  - d. a full-time position, separate from all other activity inspectors;
  - e. responsible for documenting compliance with the environmental conditions of this Order, as well as any environmental conditions/permit requirements imposed by other Federal, state, or local agencies; and
  - f. responsible for maintaining status reports.
8. Millennium shall file updated status reports prepared by the lead environmental inspector with the Secretary on a **weekly** basis **until** all construction-related activities, including restoration and initial permanent seeding, are complete. On request, these status reports will also be provided to other Federal and state agencies with permitting responsibilities. Status reports shall include:
  - a. the current construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
  - b. a listing of all problems encountered and each instance of noncompliance observed by the environmental inspectors during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other Federal, state, or local agencies);
  - c. corrective actions implemented in response to all instances of noncompliance, and its cost;
  - d. the effectiveness of all corrective actions implemented;
  - e. a description of any landowner/resident complaints which may relate to compliance with the requirements of this Order, and the measures taken to satisfy its concerns; and
  - f. copies of any correspondence received by Millennium from other Federal, state or local permitting agencies concerning instances of noncompliance, and Millennium's response.
9. Millennium must receive written authorization from the Director of OEP **before commencing service** from the project. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way is proceeding satisfactorily.
10. **Within 30 days of placing the certificated facilities in service**, Millennium shall file an affirmative statement with the Secretary, certified by a senior company official:

- that the facilities have been constructed and installed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
- b identifying which of the certificate conditions Millennium have complied with or will comply with. This statement shall also identify any areas along the right-of-way where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
- 11 Millennium shall file with the Secretary a contingency plan for the crossing of the Croton River (MP 396.8) in the event the directional drill should be unsuccessful. This should be a site-specific plan that includes scaled drawings identifying all areas that would be disturbed by construction. Millennium shall file this plan concurrent with its application to the COE and NYSDEC for a permit to construct using this plan. The Director of OEP must review and approve this plan in writing **before construction** of the alternate crossing plan. (p. 5-14)
12. Millennium shall employ at least one wetland specialist per construction spread. The wetland specialist shall be familiar with the existing hydrologic patterns of the affected wetlands within the construction work area and shall be present during final grading of these wetlands. The wetland specialist shall have the authority to direct any modifications to the final grade, as necessary, to ensure that the original hydrologic patterns of affected wetlands are restored to the fullest extent practicable. (p. 5-18)
3. **Prior to construction**, Millennium shall establish an environmental mitigation complaint resolution procedure that would be in place throughout construction and restoration of the 9/9A Proposal. Millennium shall send a letter to each landowner informing them about the complaint procedure. The complaint procedure shall: (p. 5-26)
- a include a local Millennium contact (and telephone number) and a "hotline" contact (and toll-free telephone number);
- b. indicate how long it will take after complaints/inquiries are made for Millennium to respond; and
- indicate that the response will inform the caller how and when problems were or will be resolved.
- Landowners shall also be informed that if Millennium does not resolve reported problems, then the landowner should call the FERC Enforcement Hotline [(877) 303-4340].
4. Millennium shall consult with and assist FEMA with the development of a Contingency Plan for the emergency evacuation route for the Indian Point Nuclear Power Plant. **Prior to construction** Millennium shall file with the Secretary all correspondence with FEMA and the final Contingency Plan. (p. 5-27)
- 5 Millennium shall coordinate with the NYSDOT as much as possible about the pipeline siting with respect to a potential ramp location near MP 402.5 and file any correspondence or plans developed with the NYSDOT with the Secretary **prior to construction**. (p. 5-30)

16. **Before construction**, Millennium shall file with the Secretary all mitigation plans for construction of the pipeline and restoration of the construction right-of-way developed with the property owners identified on table 5.7.3-1, for review and written approval of the Director of OEP. (p. 5-32)
7. On U.S. Route 9 (approximate MPs 391.8 to 394.2), Millennium shall avoid construction activities in the northbound lane between the hours of 3 and 8 p.m., unless otherwise approved or restricted by the NYSDOT in writing. (p. 5-38)
18. On State Routes 9A/100 (approximate MPs 401.3 to 404.0), Millennium shall avoid construction for an additional 4 hours during the peak evening traffic period between the hours of 3 and 7 p.m., unless otherwise approved or restricted by the NYSDOT in writing. (p. 5-39)
19. **Prior to construction**, Millennium shall file a traffic management plan for each ramp closure with the Secretary for review and written approval by the Director of OEP. The traffic management plan shall identify the hours of closure, the method of advance notification, the detour route, and signing, as needed. The plan shall discuss the feasibility of using weekends for construction. Millennium shall consult with the NYSDOT and file its comments and/or approval of the plan. (p. 5-39)
20. **Prior to construction**, Millennium shall file with the Secretary for review and written approval by the Director of OEP, a traffic management plan for each road that is proposed for an open cut. The traffic management plan shall identify construction work hours, lane closures (including the duration of the closure), how traffic would be managed (i.e., signs, flagmen, etc.) and routed through construction, what provisions would be made for pedestrian traffic, and traffic detours, as needed. The traffic management plan shall discuss the feasibility of using weekends for construction. Millennium shall consult with the NYSDOT and file its comments and/or approval of the plan.. (p. 5-39)
21. Millennium shall avoid construction during the weekday morning peak period within 300 feet of signalized intersections (State Route 134 [MP 398.6], Chappaqua Road [MP 400.4], and North State Road [MP 401.1]) along State Route 9A, unless otherwise approved or restricted by the NYSDOT in writing. (p. 5-42)
22. **Prior to construction**, Millennium shall file with the Secretary for review and written approval by the Director of OEP, a traffic management plan for installation of the pipeline at bridge overpasses. The traffic management plan shall identify construction work hours, lane closures (including the duration of the closure), how traffic would be managed (i.e., signs, flagmen, etc.) and routed around construction, and shall discuss the feasibility of using weekends for construction. Millennium shall consult with the NYSDOT and file its comments and/or approval of the plan. (p. 5-43)
23. **Before construction**, Millennium shall file with the Secretary for review and written approval by the Director of OEP, a blasting plan that identifies the locations by milepost where blasting is necessary during construction along U.S. Route 9, State Route 9A, and State Routes 9A/100, how blasting would be conducted, and how traffic would be managed. The plan shall be developed in consultation with the NYSDOT and include any necessary restrictions to avoid lane reductions (to accommodate work areas) before and after any blasting operation and until any traffic backups have ceased. Millennium shall file the NYSDOT comments and/or approval of the plan. (p. 5-44)

24. Millennium shall file with the Secretary, **prior to the close of the SDEIS comment period**, the site-specific plan developed for NYSDOT to restore vegetative screening or to install screening fences near residences, and all final plans developed with landowners to protect or replace specific trees. (p 5-47)
25. Millennium shall defer construction of facilities, and use of all staging, storage, and temporary work areas, and new or to-be-improved access roads until: (p. 5-48)
- a. Millennium files with the Secretary all additional cultural resources surveys and evaluation reports, and any required treatment plans, and the appropriate SHPO's comments on the reports and plans;
  - b. the ACHP has been given the opportunity to comment on the project; and
  - c. the Director of OEP reviews and approves all cultural resources reports and plans, and notifies Millennium in writing that construction may proceed.

All material filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION -- DO NOT RELEASE."

26. Millennium shall file a site-specific plan identifying how it would reduce construction noise during a directional drill. The plan shall include projected daytime and nighttime noise levels at nearby residences and mitigation measures that will be used to minimize noise at these residences if the noise level would exceed an  $L_{dn}$  of 55 dBA at any residence. The plan shall be filed with the Secretary for review and written approval by the Director of OEP **before construction**. (p. 5-56)
27. Millennium shall bore the southbound State Route 100/northbound State Route 9A ramp (MP 401.3) or explain why it is not feasible for review and written approval by the Director of OEP **before construction**. (p. 6-21)